BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the matter of the amendment of ARM 17.30.702 and the adoption of new rule I pertaining to defining nutrient reducing subsurface wastewater treatment systems	)))))	NOTICE OF PUBLIC HEARING ON PROPOSED AMENDMENT AND ADOPTION (WATER QUALITY)

TO: All Concerned Persons

1. On March 24, 2004 at 3:00 p.m., the Board of Environmental Review will hold a public hearing in Room 111 of the Metcalf Building, 1520 East Sixth Avenue, Helena, Montana, to consider the proposed amendment and adoption of the above-stated rules.

2. The Board will make reasonable accommodations for persons with disabilities who wish to participate in this public hearing or need an alternative accessible format of this notice. If you require an accommodation, contact the Board no later than 5:00 p.m., March 15, 2004, to advise us of the nature of the accommodation that you need. Please contact the Board Secretary at P.O. Box 200901, Helena, Montana 59620-0901; phone (406) 444-2544; fax (406) 444-4386; or email ber@state.mt.us.

3. The rule proposed to be amended provides as follows, stricken matter interlined, new matter underlined:

17.30.702 DEFINITIONS (1) through (8) remain the same.

~~(9) "Level 2 treatment" means a waste water treatment system that will provide a higher degree of treatment than conventional systems, including the removal of at least 60% of nitrogen as measured from the raw influent load to the system. The term does not include treatment systems for industrial waste.~~

(9) "Level 1a treatment" means a subsurface wastewater treatment system (SWTS) that:

(a) removes at least 50%, but less than 60%, of total nitrogen as measured from the raw sewage load to the system; or

(b) discharges a total nitrogen effluent concentration of greater than 24 mg/L, but not greater than 30 mg/L. The term does not include treatment systems for industrial waste.

(10) "Level 1b treatment" means a SWTS that:

(a) removes at least 34%, but less than 50%, of total nitrogen as measured from the raw sewage load to the system; or

(b) discharges a total nitrogen effluent concentration of greater than 30 mg/L, but not greater than 40 mg/L. The term does not include treatment systems for industrial waste.

(11) "Level 2 treatment" means a SWTS that:

(a) removes at least 60% of total nitrogen as measured from the raw sewage load to the system; or

(b) discharges a total nitrogen effluent concentration of 24 mg/L or less. The term does not include treatment systems for industrial waste.

(10) through (24)(b) remain the same, but are renumbered (12) through (26)(b).

AUTH: 75-5-301, 75-5-303, MCA
IMP: 75-5-303, MCA

REASON: The Department has requested that the Board propose revisions to the existing nondegradation rules and a new rule for subsurface wastewater treatment systems (SWTS) that remove nitrogen at a better efficiency than a conventional septic tank/drainfield system. Current rules and circulars provide only a few sentences regarding the information required to determine whether a SWTS can be classified as a nitrogen-reducing level 2 system. The proposed rules are necessary to provide more guidance and more detailed monitoring requirements. The rules will provide manufacturers with a clear goal to achieve in order to obtain a classification as level 1a, 1b, or 2. The detailed requirements will also improve the consistency of the department's treatment technology evaluation process.

Two new terms "level 1a" and "level 1b" are being added to the rule definitions. Currently, only the term "level 2" is defined in the rule. These two new categories of nitrogren treatment are necessary in order to give credit to subsurface wastewater treatment systems that treat nitrogen better than a conventional system but are not able to meet the criteria for level 2 designation. The required nitrate concentration at the end of a mixing zone for a level 1a or level 1b system would remain as less than or equal to 5 mg/L, the same as for a conventional system. Only level 2 systems would be able to increase the nitrate concentration up to 7.5 mg/L, pursuant to 75-5-301(5)(d), MCA.

Proposed new (11) is a modification of the current definition of level 2 in existing (9). The language "or discharging a total nitrogen effluent concentration of 24 mg/L or less" is being added to the definition. This change is

necessary because many types of treatment systems cannot collect raw influent samples without significantly disrupting treatment of the wastewater. Under this revised definition, a wastewater system can be classified as level 2 (or level 1a or level 1b as defined previously) without collecting influent data, except for the single sample required in (3)(c) of proposed new rule I.

4. The proposed new rule provides as follows:

NEW RULE I CRITERIA FOR NUTRIENT REDUCTION FROM SUBSURFACE WASTEWATER TREATMENT SYSTEM (SWTS) (1) This rule describes the information that must be submitted to obtain a department classification of a SWTS as level 1a, level 1b or level 2, as those terms are defined in ARM 17.30.702. The nitrogen treatment efficiency that a SWTS is granted under this rule may be used as the effluent concentration in mixing zone calculations.

(2) A person seeking classification of a SWTS as level 1a, level 1b, or level 2 must submit the following background information to the department regarding the SWTS, in addition to any other information the department determines is necessary to verify the long-term treatment capabilities of the system:

(a) a description of the technology utilized by the system and the system components;

(b) engineering details regarding component sizes and materials specifications. Components include, but are not limited to, tanks, pumps, piping, control panels, and treatment media;

(c) operation and maintenance requirements;

(d) a description of the long-term reliability of the system components;

(e) a description of the installation process; and

(f) information verifying the reliability of the SWTS manufacturer and vendor. At a minimum, the vendor or manufacturer must either:

(i) have maintained an office in Montana for the past five years with a significant portion of its business related to design, construction, or installation of SWTSs; or

(ii) demonstrate an equivalent level of experience and reliability in Montana.

(3) A person seeking classification of a SWTS as level 1a, level 1b, or level 2 must submit monitoring information as provided in this section. The department may require additional information (particularly for technologies not included in department Circular DEQ-4) if necessary to verify the long-term reliable treatment capabilities of the system.

(a) The following background information must be submitted for each system monitored:

(i) system address (including legal description);

(ii) system start-up date;

(iii) description of current and historical system use, particularly during the performance monitoring period; and

(iv) monitoring data collected prior to and after the required performance monitoring period.

(b) For a SWTS that uses the effluent total nitrogen concentration to determine treatment efficiency, the monitoring must be from at least six systems. For a SWTS that uses the percent total nitrogen removed from measured raw sewage to determine treatment efficiency, the monitoring must be from at least three systems.

(c) For each SWTS that is monitored, at least one representative sample of raw sewage must be collected and analyzed for nitrate (as N), nitrite (as N), ammonia (as N), total kjeldahl nitrogen (TKN) (as N), biological oxygen demand (BOD), and total suspended solids (TSS). This information will be used to determine the raw sewage strength, which must not exceed residential strength. Chemical characterization of raw sewage must be based on one of the following representative samples:

(i) if the septic tank or other initial tank is used only for primary treatment of the sewage, the sample should be collected from that tank;

(ii) if the septic tank or other initial tank is used for treatment beyond primary treatment, the sample should be collected prior to start-up of the SWTS from that tank; or

(iii) another department-approved location.

(d) Each SWTS must be monitored for one year. At least one SWTS must be monitored for at least two years.

(e) Sampling frequency must be at least monthly (or equivalent frequency as approved by the department) during the winter months (November through April), and at least quarterly during the summer months (May through October). At least 50% of the monitoring data from each SWTS must be collected during the winter months.

(f) Each effluent sample must be analyzed for nitrate (as N), nitrite (as N), ammonia (as N), TKN (as N), BOD, TSS, and flow. If influent monitoring is conducted, each influent sample must be analyzed for TKN (as N) or total nitrogen. If the SWTS is experiencing significant infiltration and inflow, the department may require that influent samples be collected and analyzed during each effluent monitoring event to determine an accurate representation of the nitrogen-reducing capabilities of the system.

(g) Monitored SWTSs must be in Montana or located in a climate similar to Montana.

(h) The arithmetic mean of the available data will be used to determine compliance with this rule.

(i) All water analyses, except for temperature, must be conducted according to an EPA-approved method by an independent laboratory. Temperature measurements must be conducted on-site.

(j) The department may waive specific requirements in this rule if:

(i) the monitoring data are substantially equivalent to those requirements; or

(ii) the SWTS uses a proven nutrient reduction technology listed in DEQ-4 with proprietary variations.

(4) The results from a SWTS that is tested under the EPA/national science foundation (NSF) environmental technology verification (ETV) program may be used to demonstrate compliance with the requirements in (3).

(5) In response to a request for classification of a SWTS as level 1a, level 1b, or level 2, the department may, after evaluating the SWTS under the criteria in this rule:

(a) approve the request;

(b) approve the request with modifications or conditions;

(c) deny the request; or

(d) deny the request pending submittal of additional information.

(6) If a SWTS that is classified as level 1a, level 1b, or level 2 is modified, the department may require that the SWTS be re-evaluated under the criteria in this rule.

(7) If subsequent data indicate that a SWTS classified under this rule is not reliable or cannot meet required nutrient reductions, the department may rescind the classification.

(8) All SWTSs classified as a level 1a, level 1b, or level 2 must have an operation and maintenance (O&M) contract in perpetuity for each system installed. The O&M contract will be required in the subdivision approval, or as a deed restriction if a subdivision plat approval is not required for the property. O&M must be conducted by the system manufacturer, an approved vendor, or other qualified personnel. The SWTS vendor or manufacturer must offer an O&M plan that meets the requirements of this section and the requirements in department Circular DEQ-4. At a minimum, the O&M contract must include:

(a) an on-site inspection of all the major components of the SWTS twice a year for the first two years after use of the system begins, and annually thereafter. Inspections of

suspended growth systems must be twice as frequent. Inspection items must include verifying proper operation of the visual/audible alarm system required in (9) and determining whether any water treatment devices have been added, modified or removed from the water system that discharges to the SWTS; and

(b) annual effluent sampling and analysis for nitrate (as N), nitrite (as N), ammonia (as N), TKN (as N), BOD, TSS, fecal coliform, specific conductance and temperature. Effluent sampling must be conducted after all treatment is complete, but before discharge to the absorption area.

(9) All SWTSs classified as level 1a, level 1b, or level 2 must have the following features:

(a) a visual and/or audible alarm warning that indicates if any portion of the treatment system (prior to the absorption system) is failing to provide the designated level of treatment;

(b) a physical barrier that prevents the discharge of wastewater to the absorption system if any portion of the treatment system (prior to the absorption system) is failing to provide the designated level of treatment; and

(c) a backflow prevention device installed between the house or facility and the septic tank to prevent sewage from entering the structure.

AUTH: 75-5-301, 75-5-303, MCA
IMP: 75-5-303, MCA

REASON: Section (2) is included to provide information on the dependability of the system and on the dependability of the vendor/distributor. This section is necessary to assure that the treatment system is reliable. Requiring assurance that the vendor/distributor is reliable is necessary given past experiences in Montana where vendors have sold proprietary systems to homeowners and then left the state. It is then difficult or impossible to find a qualified person to work on the systems when maintenance is needed.

Subsection (3)(a) is necessary to help the Department assess any irregularities in the monitoring data. Knowing what the system was used for and when it began operation helps the Department to review the monitoring data. Subsection (3)(a)(iv) is necessary to give the Department the opportunity to evaluate all data collected from the system and not just the best data.

Subsection (3)(b) includes different requirements for the number of systems that need to be monitored depending on whether the influent to the system is monitored every time the effluent is monitored. Systems that do not measure influent

concentrations every time the effluent is monitored are required to monitor twice as many systems. This requirement is necessary because collecting influent and effluent samples for every sampling round is statistically a better method for determining the treatment capability of a wastewater system.

The proposed rule applies only to systems that treat residential-strength wastewater. The requirement in (3)(c) is necessary to insure that the wastewater being monitored is consistent with residential strength wastewater.

Subsection (3)(d) requires monitoring for at least one year to determine how the systems operate in all climatic conditions. The requirement that one system be monitored for two years is necessary to insure that the treatment technology has long-term reliability.

Nitrogen reduction in SWTSs is less effective under colder temperatures. Subsection (3)(e) requires at least half of the monitoring data be collected during the winter months. This is necessary to insure that data showing a system's nitrogen reducing capabilities are representative of a year-round average.

The requirement in (3)(f) is necessary to prevent a treatment technology from getting credit for nutrient reduction when the influent nitrogen concentration is unusually low due to dilution of the influent wastewater. This subsection would typically only apply to large systems that have significant amounts of collection pipes where infiltration and inflow could occur.

As discussed in (3)(e), nitrogen reduction is less effective in cold weather. Therefore, (3)(g) is necessary to require that testing be conducted in states with a cold weather climate similar to Montana's.

Subsection (3)(h) requires that monitoring data be evaluated using the arithmetic mean, which is the average of the data.

Subsection (3)(i) requires water analyses to be conducted by an independent laboratory using an EPA-approved method. These are necessary to standardize the analysis of different systems.

Subsection (3)(j) is included to provide flexibility to the Department if the monitoring data do not meet the exact letter of the previous requirements in (3)(a) through (i), but are equivalent. This subsection also allows more flexibility if the Department is familiar with the technology being used. New types of technology will be scrutinized to a higher degree.

The U.S. Environmental Protection Agency (EPA) and the National Science Foundation (NSF) have a program to test water and wastewater treatment technologies. One of the categories

is for nitrogen reduction in SWTSs. The ETV program is an intensive one-year controlled monitoring program that conducts weekly and daily monitoring under a variety of stress conditions. Section (4) allows a manufacturer to substitute all the monitoring requirements in (3) for a favorable result from the ETV program. This section is necessary to allow for alternative sources of valid data.

Section (5) identifies the actions that the Department may take after evaluation of a SWTS. This section is necessary to provide guidance to applicants.

Section (6) is necessary to allow the Department to re-evaluate a product if the Department believes a design change could potentially reduce the nitrogen treatment capabilities of a system. Re-evaluation could consist of collecting a new body of data, or it may require only re-submittal of system specifications so that the Department can verify that the modification will not negatively affect the system performance.

Section (7) is necessary to allow the Department to rescind a nutrient-reducing classification if long-term data show the SWTS is not treating nitrogen to the applicable concentration.

Operation and maintenance (O&M) is often overlooked by homeowners. With the increased complexity of nutrient reducing SWTSs as compared to conventional systems, O&M is critical to insuring that wastewater is treated properly for the life of the system. Section (8) is necessary to address this issue. Annual monitoring is necessary to insure the system is operating as designed and as approved by the Department. The increased sampling frequency for suspended growth systems (e.g., Aerobic Treatment Unit (ATUs)), is necessary due to the more complex nature of these systems as compared to attached-growth systems (e.g., recirculating trickling filters). The quarterly monitoring scheduled for ATUs is the same as that recommended by EPA in "Onsite Wastewater Treatment Systems Manual," (February 2002).

The requirement in (9) for a physical barrier to the drainfield if the system is not operating properly is necessary to insure that improperly operating systems will be maintained. The audible and visual alarm will provide several days warning before the system is hydraulically overloaded. The backflow prevention device is necessary to prevent wastewater from backing up into a dwelling. Once hydraulically overloaded, the wastewater will likely surface through the septic tank or a recirculation tank, but not into the house.

5. Concerned persons may submit their data, views or arguments, either orally or in writing, at the hearing. Written data, views or arguments may also be submitted to the Board of Environmental Review, P.O. Box 200901, Helena, Montana 59620-0901, faxed to (406) 444-4386 or emailed to the Board Secretary at ber@state.mt.us and must be received no later than 5:00 p.m., March 25, 2004. To be guaranteed consideration, mailed comments must be postmarked on or before that date.

6. Thomas Bowe, attorney for the Board, has been designated to preside over and conduct the hearing.

7. The Board maintains a list of interested persons who wish to receive notices of rulemaking actions proposed by this agency. Persons who wish to have their name added to the list shall make a written request that includes the name and mailing address of the person to receive notices and specifies that the person wishes to receive notices regarding: air quality; hazardous waste/waste oil; asbestos control; water/wastewater treatment plant operator certification; solid waste; junk vehicles; infectious waste; public water supplies; public sewage systems regulation; hard rock (metal) mine reclamation; major facility siting; opencut mine reclamation; strip mine reclamation; subdivisions; renewable energy grants/loans; wastewater treatment or safe drinking water revolving grants and loans; water quality; CECRA; underground/above ground storage tanks; MEPA; or general procedural rules other than MEPA. Such written request may be mailed or delivered to the Board of Environmental Review, 1520 E. Sixth Ave., P.O. Box 200901, Helena, Montana 59620-0901, faxed to the office at (406) 444-4386, emailed to the Board Secretary at ber@state.mt.us or may be made by completing a request form at any rules hearing held by the Board.

8. The bill sponsor notice requirements of 2-4-302, MCA, do not apply.

BOARD OF ENVIRONMENTAL REVIEW

By: *Joseph W. Russell*
JOSEPH W. RUSSELL, M.P.H.,
Chairman

Reviewed by:

James M. Madden
JAMES M. MADDEN, Rule Reviewer

Certified to the Secretary of State, February 17, 2004.